

American Iron and Steel Institute

# PROFILE

**2019–2020**



**STEEL** *has been and will  
continue to be the driving force  
behind American innovation  
and manufacturing excellence.*





# CONTENTS



- 2 Message from AISI President and CEO
- 3 Steelmark History
- 4 The Making of Steel
- 5 Economic Impact of the American Iron and Steel Industry
- 6 National Security and Critical Infrastructure
- 8 The Steel Industry Leads the Way
- 10 Global Leader in Sustainability
- 12 AISI Policy Priorities
  - 14 Trade
  - 15 Tax
  - 16 Energy
  - 17 Environment
  - 18 Transportation & Infrastructure
  - 19 Workforce
- 20 AISI in the News
- 21 Technology & Innovation
- 22 Automotive
- 24 Construction
- 26 AISI Mission
- 27 SMDI Mission



# History of the **STEELMARK**

**AISI's Steelmark is the renowned brand to promote steel made in the Americas.**

The three hypocycloids mean: steel lightens your work, brightens your leisure and widens your world. They also represent the three materials used to produce steel: yellow for coal, orange for iron ore and blue for steel scrap.

The Steelmark, originally developed by U. S. Steel in the 1950s, was later provided to AISI for industry-wide use. In 1962, a steel executive suggested to the Pittsburgh Steelers that they use it on their helmets, and with that, the Steelmark blazed its way to national recognition. Today it is one of America's great iconic images.



# THE MAKING of Steel

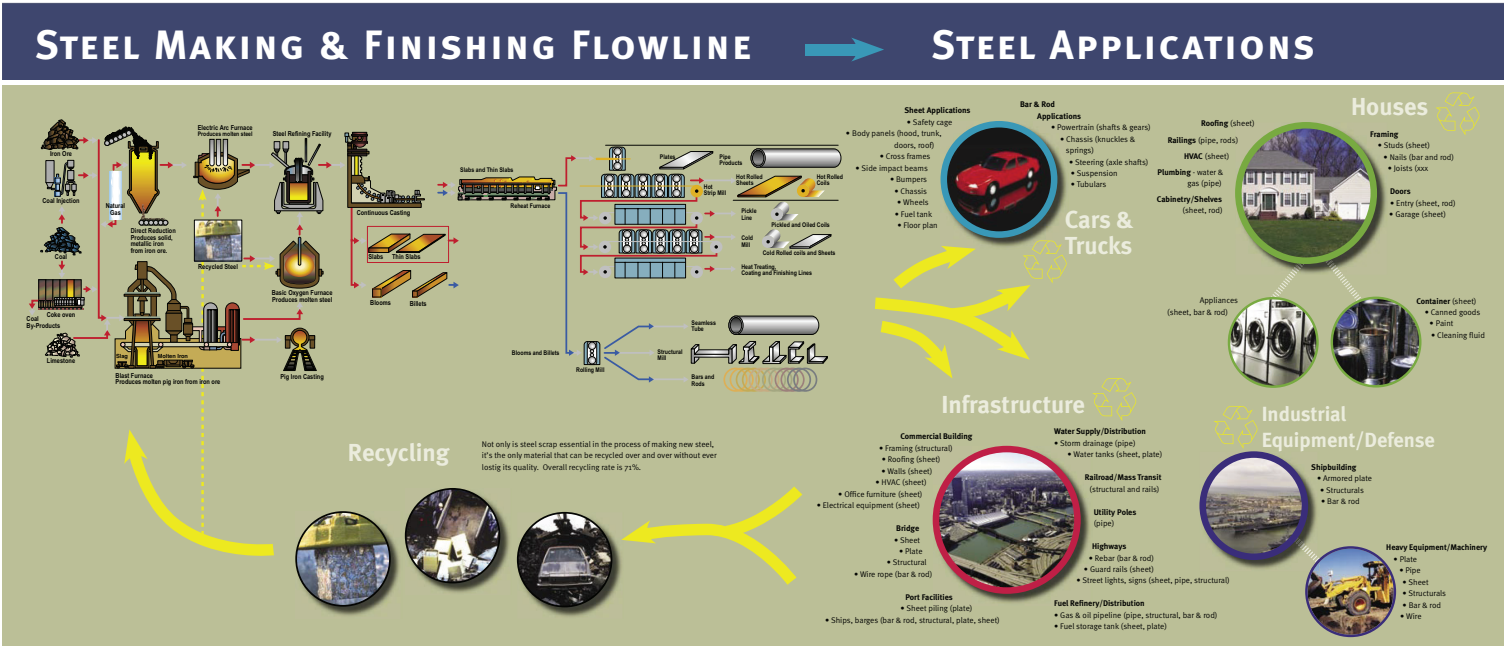


Innovation and technology have transformed America’s steel industry into one of the world’s most competitive, sustainable and environmentally progressive industries. Steel productivity has more than tripled since the early 1980s — making America stronger at home and abroad. Steelmaking is a process which has been transformed by modern technology. Today there are two main processes to create steel: The Basic Oxygen Furnace (BOF) and the Electric Arc Furnace (EAF). BOF steelmaking begins with the blast furnace, in which iron ore is combined with coke, limestone and a blast of compressed hot air to produce molten iron, often referred to as pig iron. The BOF then combines the pig iron, scrap steel and flux in a furnace, which then has oxygen blown into it to remove carbon.

The first electric arc furnaces (EAFs) appeared in the late 19th Century. The use of EAFs has expanded and now accounts for nearly two-thirds of steel production in the United States. The EAF is different from the BOF as it uses electrodes to create electric arcs to melt scrap steel or other iron material.

After the BOF or EAF process, the molten steel is sent to a secondary refining station to finalize the steel chemistry. Once the secondary refinement process is complete, the molten steel is sent to the caster where it is transformed into a solid shape.

ABOVE: Photo courtesy of Stelco Inc.  
BELOW: Graphic courtesy of the American Iron and Steel Institute.



# ECONOMIC IMPACT

of the American Iron and Steel Industry

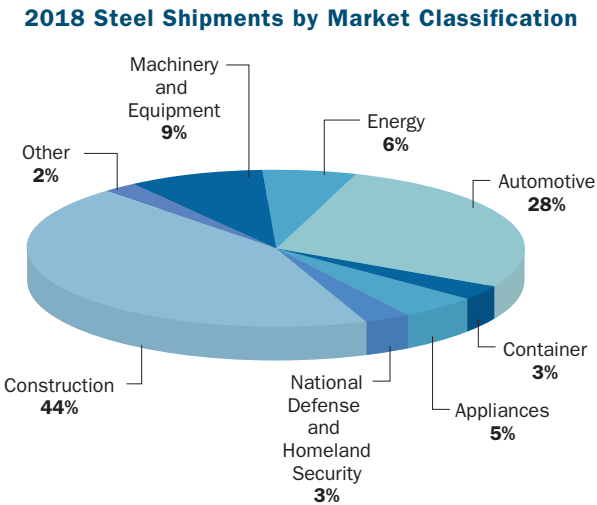
The American iron and steel industry is a dynamic part of the U.S. economy, accounting for more than \$520 billion in economic output and supporting nearly two million jobs in 2017 when considering the direct, indirect (supplier) and induced impacts. According to a recent analysis conducted by the prominent research firm John Dunham & Associates (JDA) and commissioned by the American Iron and Steel Institute, the iron and steel industry generated an estimated \$56 billion in federal, state and local taxes and industry-supported workers earned more than \$130 billion in wages and benefits.

The results illustrate why strong, pro-manufacturing policies are needed to ensure the sustainability of an industry with such an impactful employment base and robust economic footprint. Please visit our comprehensive analysis and state-by-state breakdown of the economic impact of the American steel industry at [www.steel.org/economicimpact](http://www.steel.org/economicimpact).



2018 U.S. Steel Industry STATISTICAL HIGHLIGHTS	
Steel shipments	95.3 million tons
Imports (finished)	25.7 million tons
Exports	8.8 million tons
Apparent steel demand	112.2 million tons
Steel mill employment	141,700*

Source: American Iron and Steel Institute  
\*Based on U.S. Department of Labor December 2018 monthly employment data.







TOP: The USS Gerald R. Ford was commissioned in 2017 and constructed using ArcelorMittal steel.

Photo courtesy of Huntington Ingalls Industries.

BOTTOM: The mine-resistant ambush-protected vehicles (MRAPs) utilize special armored steels that are produced and developed in America.

Photo courtesy of Stockrek Images, Inc.

OPPOSITE: Power grid infrastructure, high voltage substation metal structure in Texas

[RobertCoy]/Adobe Stock

# ***NATIONAL SECURITY***

## and Critical Infrastructure

**Steel is essential to our national security.** Every military platform and weapon system is dependent on American-produced steel. National security also depends on critical infrastructure like transportation, public health and safety, energy, and the power grid—all of which rely heavily on steel.

The president's determination that elevated levels of foreign steel imports threaten the sustainability of the steel industry and risk national security, and his subsequent actions under Section 232 of the Trade Expansion Act to impose 25 percent tariffs (or in some instances quotas) on imported steel, are intended to help restore the domestic steel industry to a sustainable capacity utilization rate of 80 percent or higher over a meaningful period of time. This will help ensure the industry's continued ability to meet national security needs.

The president's trade actions are working. Foreign steel imports have decreased since the tariffs were enacted, many plants are restarting, capacity utilization is increasing and steel workers are going back to work.

The steel industry can now be on track to maintain our essential contributions to national security and critical infrastructure. And steel using industries will benefit from having a stable supply of domestic steel.



*Foreign steel imports have decreased since the tariffs were enacted, many plants are restarting, capacity utilization is increasing and steel workers are going back to work.*







# STEEL INDUSTRY

Leads the Way

**Steel's versatility and the innovation of its producers and users have helped to establish steel as the material of choice particularly in energy, transportation and construction.** The steel industry continues to lead in revolutionary developments: new steel grades for the automotive market; iron and steelmaking technologies that will significantly reduce energy and greenhouse gas emissions; advances in steel building construction; and energy transmission and development — to name a few. Since 1990, the industry has reduced its energy intensity and greenhouse gas (GHG) emissions intensity by 35 and 37 percent, respectively.

Our industry is a leader in quality, efficiency and productivity. Labor productivity in the U.S. has seen a five-fold increase since the early 1980s, going from an average of 10.1 man-hours per finished ton of steel to an average of 1.9 man-hours per finished ton of steel in 2017.



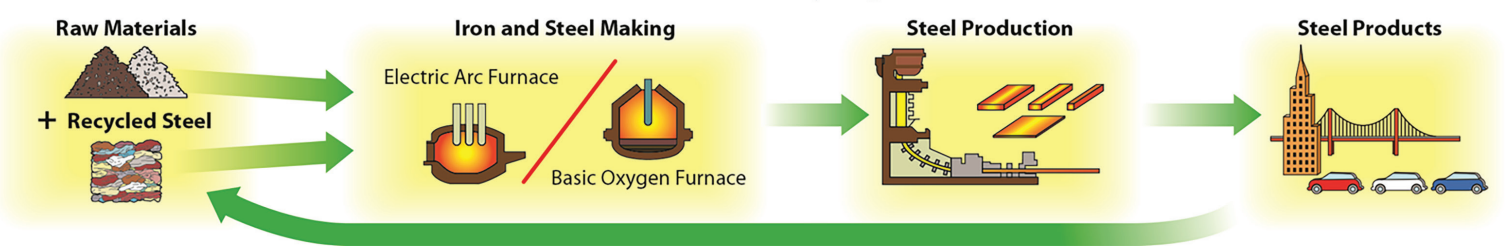
*The United States is recognized as the most energy efficient of any major steel producing country, according to the Department of Energy.*







Steel's Continuous Recycling Path



*Each year, more steel is recycled than paper, plastic, aluminum and glass—combined.*

## Global Leader In

# SUSTAINABILITY

**The American steel industry is a global leader in sustainability, responsibly producing steel that advances modern living, while staying focused on economic, environmental and social sustainability.** Innovative grades of steel enable manufacturers to do more with less, promoting material efficiency and maintaining recyclability.

Each year, more steel is recycled than paper, plastic, aluminum and glass—combined. The steel industry is recycling three-quarters of the steel coming from the packaging market, nearly 100 percent of automobiles at end of their useful lives, and more than 90 percent of steel from infrastructure, appliances and construction.

Through AISI, steel producers actively research new technologies to further reduce emissions and increase energy efficiency. The steel industry has undertaken important sustainability-related projects to demonstrate the environmental performance of steel over competing products, including:

- ◆ New life cycle inventory (LCI) data, a compilation of materials, energy, water, and waste inputs and outputs for use in life cycle assessment (LCA) studies, was collected in 2018 for many North American-produced steel products. This new data will reflect advances in steelmaking technology as well as improvements to the overall electric grid, and will demonstrate the environmental advantages of steel.
- ◆ LCAs have been conducted comparing steel-framed buildings to wood-framed buildings in different parts of the country and have demonstrated that steel buildings can result in lower environmental impacts than functionally-equivalent wood buildings.
- ◆ Two important peer-reviewed studies have demonstrated that using advanced high-strength steel (AHSS) to make vehicles lighter results in lower greenhouse gas (GHG) emissions than using aluminum for the same purpose, when the entire vehicle life cycle is considered.

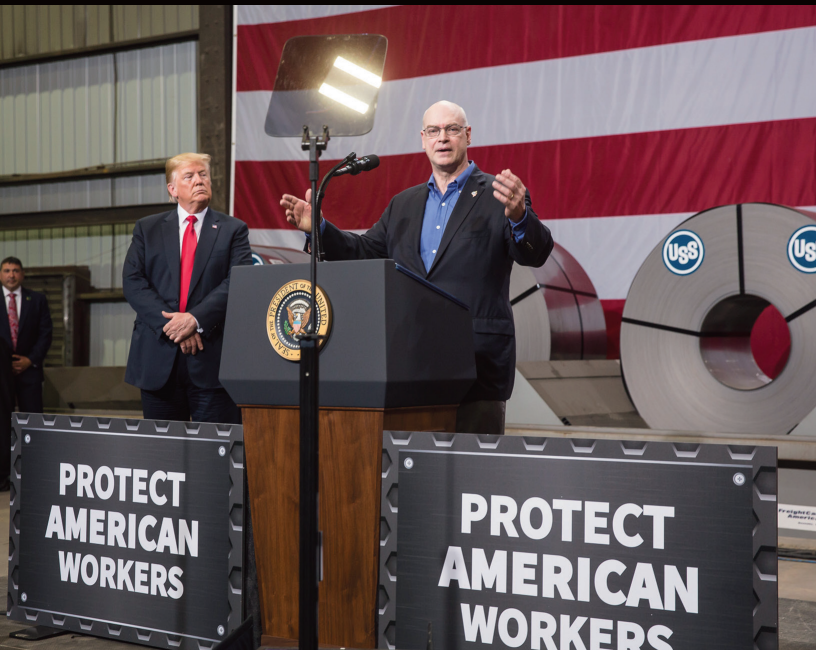


ABOVE: Photo courtesy of DTE Energy.

OPPOSITE FROM TOP: Photo courtesy of Nucor Corporation.  
Graphic: American Iron and Steel Institute.



# ***AISI* POLICY PRIORITIES**



ABOVE LEFT: President Trump and U. S. Steel President and CEO David B. Burritt in Granite City, IL.

ABOVE RIGHT: Rep. Mike Kelly (R-PA) tours AK Steel's Butler, PA Works.



◆ ◆ ◆ ◆

*If you don't have Steel,  
you don't have a country.*

PRESIDENT DONALD TRUMP



TOP: President Trump speaks at the reopening of U. S. Steel's Granite City Works.

BOTTOM: Rep. Warren Davidson (R-OH) tours TimkenSteel's St. Clair Plant in Eaton, OH.





TOP: White House Trade Advisor Peter Navarro speaks at the 2018 AISI Annual Meeting in Washington, DC.

BOTTOM: Brenda Smith, executive assistant commissioner for trade at U.S. Customs and Border Protection, speaks at the AISI Annual Meeting.

## TRADE

Foreign government subsidies and other market-distorting policies have resulted in massive global steel overcapacity, more than 600 million tons — seven times U.S. production in 2017 – which distorts the global steel market and steel trade. To address this, the United States government must:

- ✦ Maintain and aggressively enforce the president's Section 232 trade actions on steel imports to protect our national security by ensuring a healthy and sustainable domestic steel industry;
- ✦ Continue to press China and other nations to eliminate steel overcapacity by ending their subsidies and other market-distorting policies that promote overcapacity;
- ✦ Enforce U.S. trade laws against injurious dumping and subsidies and use all available tools to address transshipment, circumvention and evasion of trade remedy measures;
- ✦ Modernize and strengthen trade agreements with allies; and,
- ✦ Respond to foreign government currency manipulation.



RIGHT: Steel industry executives and members of the Congressional Steel Caucus after a March 2018 hearing on the impact of foreign imports on American national security.

# TAX

AISI supports tax policy that promotes investment and encourages manufacturing in the United States and increases the global competitiveness of domestic steel producers. In addition to a globally-competitive tax rate, continued encouragement of capital investment is critical for sustaining economic growth and job creation. Cost recovery systems, such as accelerated depreciated and full expensing, have a significant impact on whether or not manufacturing companies make new investments.



*Continued encouragement of capital investment is critical for sustaining economic growth and job creation.*



ABOVE: Rep. Kevin Brady (R-TX) at AISI Board of Directors Meeting in Washington, DC.

BELOW: Vice President Mike Pence visits Nucor Steel Auburn, NY.



RIGHT: EPA Administrator Andrew Wheeler and AISI President and CEO Thomas J. Gibson at the 2018 EPA Recycling Day Event.

BELOW: AISI's Environment Committee touring the Cleveland Pellet Terminal and the William G. Mather Great Lakes freighter, formerly owned by Cleveland-Cliffs and now serving as a ship museum after its decommissioning in 1980.





# ENERGY

**The production of steel is inherently energy intensive.** The affordability and reliability of key energy resources, including electricity, natural gas and coal, are essential to the industry's competitiveness. Regulations of energy providers should not undermine the competitiveness of U.S. manufacturers or limit production of domestic energy sources. The United States needs policy measures that facilitate investment in our national energy infrastructure, including production, distribution, transmission and storage projects, in order to maintain a robust economy and promote domestic industry.



*Regulations of energy providers should not undermine the competitiveness of U.S. manufacturers or limit production of domestic energy sources.*

# ENVIRONMENT

**American steel producers are continually seeking to reduce our environmental footprint** even while increasing production of the advanced and highly recyclable steel that our economy needs. These efforts have yielded dramatic improvements in air emissions, water discharges and waste disposal over the past several decades. AISI continues to work with EPA to advocate for federal regulations that preserve and protect our shared environment, but that do so without undermining our industrial competitiveness and include careful consideration of cost-benefit analysis.

BELOW: Dr. Jody Hall, vice president, automotive market, SMDI, testifies at a public hearing in Dearborn, MI about the proposed Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule.







*The United States is in need of increased, long-term funding for improvements to the nation’s transportation, water, energy and other critical infrastructure.*



TOP: Photo courtesy of SSAB Americas.

BOTTOM: AISI member companies and the Great Lakes region as a whole depend on the Soo Locks’ ability to regulate the flow of shipping traffic through the St. Mary’s River to ensure the safe transportation of iron ore to blast furnace facilities in the lower part of the region. More than 75 million tons of cargo annually passes through the Locks, including nearly all of the iron ore pellets that are essential for the American steel industry throughout the Great Lakes.

[Jacob]/Adobe Stock



# TRANSPORTATION & INFRASTRUCTURE

## Investment in key transportation and infrastructure facilitates broad economic growth

and directly enhances the competitiveness of the domestic steel industry. The United States is in need of increased, long-term funding for improvements to the nation's transportation, water, energy and other critical infrastructure. Federal funding should be accompanied by reforms that streamline permitting to speed approval of large projects and should ensure that iron and steel used for the nation's infrastructure is produced in the United States.



Department of Transportation Infrastructure Advisor James Ray speaks at the 2018 AISI Annual Meeting.

# WORKFORCE POLICY

## The steel industry is committed to ensuring safety and health at our industrial workplaces.

AISI member companies have made substantial efforts to decrease the number and frequency of workplace incidents and continue to work through AISI to share information and best practices to meet this shared goal. Some regulations may misdirect priorities and create unnecessary costs for employers that prevent optimum workplace safety and health benefits from being realized. Policymakers should instead commit to a cooperative approach wherein federal agencies, employers and employees work in partnership to advance workplace safety and health.



In 2018, AISI presented former Reps. Gene Green (D-TX) and Sander Levin (D-MI) with its Steel Champion Award. SSAB Americas President Chuck Schmitt presented the award to Rep. Green, and AISI President and CEO Tom Gibson presented Rep. Levin with his award.



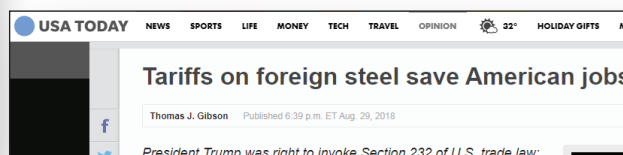
Canadian Prime Minister Justin Trudeau tours Algoma Steel's Direct Strip Production Complex.



# AISI IN THE NEWS

*AISI is widely seen as a resource to educate the media, provide data and help shape public opinion on the positions of the steel industry.*

**AISI was mentioned in the media more than 5000 times over the past year.** The Institute engages in various social media platforms, supporting social media campaigns such as #FixTheSooLocks and #AmericaSteelStrong, and generating social media presence for steel champions on Capitol Hill through our #SteelBriefs campaign. AISI was also recognized by the Occupational Safety and Health Administration (OSHA) for “efforts to promote a safety and health program in every workplace” during the 2018 Safe + Sound Campaign on Twitter.





# TECHNOLOGY & INNOVATION



AISI is currently evaluating plans to build a Flash Ironmaking Technology pilot plant, which would be the next step towards an entirely new transformational process for alternate ironmaking. This process would be based on the direct gaseous reduction of iron oxide concentrates in a flash reduction process. The technology will be applied to the production of iron as a feed to the steelmaking process and will significantly increase energy efficiency and reduce environmental emissions including CO<sub>2</sub>. This research project illustrates the steel industry's commitment to developing technical solutions today that will help realize the next-generation steel plant of the future.

AISI's Committee on Manufacturing Technology (COMT) engages in Collaborative Research and Development, including development of new technologies aimed at reducing and eliminating steel plant CO<sub>2</sub> emissions, enhancing product performance, and/or enhancing steel's properties so as to provide competitive advantages versus alternate materials.

The current research priorities for the COMT include: advanced measurement technology, recycling of steel plant co-products, CO<sub>2</sub> reduction from steelmaking processes, and additive manufacturing impacts on steel and competing materials.



*This research project illustrates the steel industry's commitment to developing technical solutions today that will help realize the next-generation steel plant of the future.*





# ***AUTOMOTIVE***





With more than 200 steel grades available, today's steel grades are as much as six times stronger than the steels of a decade ago and three to four times stronger than the latest aluminum alloys on the market. The added strength of advanced high strength steel (AHSS) allows automakers to deliver vital performance and safety benefits with lightweight products using their existing manufacturing infrastructure and eliminating major manufacturing cost penalties associated with the introduction of alternative materials.

The Steel Market Development Institute (SMDI), a business unit of AISI, works with automotive customers to lead collaborative projects, and develop and apply the next generation of advanced high-strength steels that provide high-value solutions to meet the fuel economy and performance requirements of future vehicles. The goal of the SMDI automotive program is to keep steel the material of choice in body and chassis applications through its advantages in performance, mass reduction, sustainability and value.



*The added strength of advanced high strength steel (AHSS) allows automakers to deliver vital performance and safety benefits with lightweight products.*

AISI and SMDI maintain an annual and influential presence at the North American International Auto Show and Great Designs in Steel.

Photos courtesy of the American Iron and Steel Institute and the Steel Market Development Institute.





LEFT: Electric utilities are using steel poles to harden their distribution systems because they are reliable in severe weather, easy to install, require minimal maintenance, and resistant to fire, rot, termites and woodpeckers.

BELOW: A modular system using press-brake-formed steel tub girders was used to replace the Cannelville Road Bridge in Muskingum County, OH. The project was set by an Ohio crew and completed in just 26 days, with an expected service life of more than 100 years.





# CONSTRUCTION

**Steel is an essential material for the building construction and transportation/infrastructure sectors;** valued for its durability, sustainability, reliability, cost-effectiveness and design versatility.

Steel structures are energy-efficient, low-maintenance and resilient, performing well in natural disasters such as hurricanes and earthquakes, and in extreme events like fire and blast. As a building material, steel meets sustainability requirements in standards such as the International Green Construction Code and in green building rating systems like USGBC's Leadership in Energy and Environmental Design (LEED), where steel products can help earn points toward LEED v4 certification. Steel is continuously recyclable and can be repurposed at end of life into any other steel product.

In cooperation with Canadian and Mexican partners, AISI develops and maintains cold-formed steel framing standards used extensively in North America and throughout the world.

Short span bridges less than 140 feet make up most of the U.S. bridge inventory, and many need to be repaired or replaced. Steel solutions provide initial and life cycle cost advantages. An innovative modular system using shallow steel press-brake tub girders offers significant cost and time savings for counties and state departments of transportation. This system is easy to fabricate, uses accelerated bridge construction practices and can often be installed with local crews in a single day. The expected life span for these bridges is 100 years or more. The steel industry also offers complimentary web-based design software for customized short span steel bridges that is available at [www.espan140.com](http://www.espan140.com).

BELOW: Amish Sawmill Bridge in Buchanan County, IA.

INSET: Cold-formed steel provides the highest strength-to-weight ratio of any building material and is noncombustible, resulting in safer structures and protection for occupants, owners and first responders.





# THE AMERICAN IRON AND STEEL INSTITUTE



**Founded in 1855 as the American Iron Association**, the American Iron and Steel Institute (AISI) has represented the steel industry for more than 150 years. Headquartered in Washington, D.C., AISI advocates on behalf of its member companies for public policies that support a globally competitive North American steel industry. Never has it been more critical than it is today for the industry to speak out with a unified voice on major policy issues that are impacting American manufacturers.

AISI's mission is to influence public policy, educate and shape public opinion in support of a strong, sustainable North American steel industry committed to manufacturing products that meet society's needs.

## **To achieve its mission, AISI:**

- ◆ **FOCUSES ON THE ADVOCACY** of public policy priorities central to the steel industry where AISI can make an impact on issues where there is strong member alignment.
- ◆ **INFORMS AND EDUCATES** opinion leaders about the North American steel industry's strategic importance to national and economic security.
- ◆ **COMMUNICATES THE BENEFITS** that the industry's technological advances are making to the health and safety of its workforce and to the environment.
- ◆ **COLLECTS AND PROVIDES INDUSTRY DATA** to policymakers, company personnel and the public regarding steel operations, production, energy efficiency, shipments, import/export levels and consumption.
- ◆ **PURSUES TECHNOLOGY ADVANCEMENTS** through collaborative research and development.
- ◆ **ASSISTS MEMBER COMPANIES** in attracting and retaining talent.
- ◆ **ADVANCES THE COMPETITIVE USE** of steel in traditional and growth markets.

ABOVE: Photo courtesy of TimkenSteel.



**American  
Iron and Steel  
Institute**

**WASHINGTON DC**

25 Massachusetts Avenue NW  
Suite 800  
Washington DC 20001-1431  
202.452.7100

**DETROIT**

2000 Town Center  
Suite 320  
Southfield MI 48075-1199  
248.945.4777

[www.steel.org](http://www.steel.org)



**American Iron and Steel Institute**



**@AISlsteel**

The New Steel 